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BRIARCLIFF MANOR, NY 10510

EXAMINER

WILSON, MICHAEL H

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

08/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/563,843

Applicant(s)

BOERNER, HERBERT FRIEDRICH

Examiner

MICHAEL WILSON

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action is in response to Applicant's amendment filed 13 May 2009, which amends claims 1, 2, 4-7, 9, and 10.

Claims 1-10 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1990). Otherwise **undue experimentation** would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claims 1-10 can be used as claimed and whether claims 1-10 meet the test is stated in *Ex parte Forman*, 230 USPQ 546,

547 (Bd. Pat. App. Inter. 1986) and *In re Wands*, 8 USPQ2d 1400, 1404 (Fed.Cir. 1988). Upon applying this test to claims 1-10, it is believed that undue experimentation **would** be required because:

(a) *The quantity of experimentation necessary* is **great** since claims 1-10 read on a multitude of compounds whose only common feature is a single carbon with two fluorine atoms while the specification discloses only one compound of each different formula totaling 6 compounds.

(b) There is **no direction or guidance presented** for selecting fluorinated organic substances with a refractive index of 1.30 to 1.55. While the specification is enabling for the specific examples, guidance and direction is lacking for other compounds with different sized alkyl chains and different numbers of fluorine atoms. Further the specification lacks direction and guidance in the usage of appropriate substituent groups.

(c) There is a complete **absence of working examples**.

While the specification is considered enabling for the specific compounds disclosed to have a refractive index of 1.30 to 1.55, it is not enabling for other compounds within the claimed genus. There is a complete lack of guidance and direction for selecting other compounds with different sized alkyl chains and different numbers of fluorine atoms. Further the specification lacks direction and guidance in the usage of appropriate substituent groups. One of ordinary skill in the art would be required to physically test each and every compound, among the millions of potential compounds, in order to find a suitable compound. In light of the above factors, it is seen

that undue experimentation would be necessary to make and use the invention of claims 1-10.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 2002/0094452 A1).

Regarding claims 1-7, Ueda et al. disclose a conductor material for an electroluminescent device (LEDs) [0001], which is a hole transporting material [0015], comprising a monomer triphenylamine compound [0018] conforming to instant formula XIX with at least one trifluoromethyl substituent with the general formula C_mF_{m+x} where $m = 1$ and $x = 2$ ([0062], compounds 22-29, pages 9-11, compounds 39-41 and 43, pages 14-15).

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Ueda et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a

reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fitzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Ueda et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers ([0012] and [0063]-[0070]) which comprises a luminous means ([0063] light-emitting layer).

6. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Naito (US 2002/0106531 A1).

Regarding claims 1-7, Naito discloses a conductor material for an electroluminescent device (LEDs) [0009], which is a electron and hole transporting ([0010]; [0030] compound H9 and H11), as well as emitting compounds ([0027] compounds D2-D4), which is a monomer or polymer with at least fluorinated alkyl substituent with a general formula of C_mF_{m+x} ([0027] compounds D2-D4; [0030] compound H9 and H11)). The reference discloses the metal complexes D-2 to D-4 as light emitting material [0027], and polyfluorene (instant formula XX) and polyphenylene as host material for the light-emitting layer [0030]. While the reference does not explicitly disclose the polymers as hole and electron transporting, host material for the

light-emitting layer must inherently be hole and electron transporting for the device to be functional.

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Naito being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fitzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding "n" in the formula of polyfluorene, while the reference does not explicitly disclose a range for n, it would be readily apparent to one of ordinary skill in the art that the range of 1 to 10,000,000 in the present claim would be embraced by the reference given that the reference teaches polyfluorene as a polymer.

Regarding claims 9 and 10, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0016] which comprises a luminous means ([0016] light-emitting layer).

7. Claims 1-6, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (US 2003/0091861 A1).

Regarding claims 1-6, Okada et al. disclose a conductor material for a light-emitting device (LEDs) [0007], which is an electron transporting material [0144], comprising a monomer aryl compound ([0097] compounds 116 page 41) with at least one trifluoromethyl substituent with the general formula C_mF_{m+x} where $m = 1$ and $x = 2$.

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Okada et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fitzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0033] which comprises a luminous means ([0033] light-emitting layer).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 2003/0091861 A1) in view of Ise et al. (US 2002/0028329 A1).

Regarding claim 7, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses aryl compounds with benzoimidazole derivatives with one carbon of the benzene ring replaced by nitrogen. However the reference does not explicitly disclose an aryl compound with benzoimidazole derivatives with no additional nitrogen atoms.

Ise et al. teach numerous imidazole containing compounds for use in light-emitting devices [0002]. The reference teaches similar aryl compounds with benzoimidazoles with and without an additional nitrogen atom ([0119] pages 14-41). The reference demonstrated to one of ordinary skill in the art that compounds with and

without a nitrogen atom on the "benzene" portion of the benzoimidazole are both suitable by teaching compound which only differ by the single nitrogen as both suitable (for example compounds B-10 vs. B-14 and B-40 vs. B-44).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention, given the teachings of Ise et al. that the nitrogen in the "benzene" portion of the benzoimidazole in compound 116 of Okada et al. is interchangeable with carbon resulting in a compound suitable for use in a light-emitting device, arriving at instant formula X.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naito (US 2002/0106531 A1).

Regarding claim 8, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses a polyfluorene with two fluorinated butyl substituents in the 9-position (compound H9, page 4). The reference does not explicitly disclose fluorinated octyl groups in the 9-position.

However, fluorinated butyl and fluorinated octyl are homologs - compounds differing regularly by the successive addition of the same chemical groups, in the present instance, the compounds only vary by the length of the carbon chain, and the courts have held, as found in *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977), that compounds which are homologs "are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties".

In light of the case law cited above, it therefore would have been obvious to one of ordinary skill in the art that the fluorinated octyl disclosed in the present claims is but an obvious variant of the fluorinated butyl disclosed in Naito, and thereby one of ordinary skill in the art would have arrived at the claimed invention.

Response to Arguments

12. Applicant's arguments filed 13 May 2009 have been fully considered but they are not persuasive.

Regarding the 112, first paragraph rejection applicant alleges that index of refractions for the compounds in the present claims would be readily available to one of ordinary skill in the art; however applicant does not present any evidence to support this position. The burden has properly been shifted to applicant to provide probative evidence to rebut the finding of undue experimentation. Applicant also argues that refractive index is not an inherent property but "a teaching." However applicant gives no teaching or guidance for changing or manipulating the refractive index of a compound, nor does applicant present any evidence that one of ordinary skill would understand how to tune the refractive index of a compound to a desired value. The refractive index is a measurement of the how much the speed of light is reduced when passing through the material. The refractive index of a compound is a property which is inherent to the compound; there is no evidence that the refractive index of a compound can be changed without chemically altering the compound (thus it no longer is that compound). The claimed "outcoupling effect" would inherently be present in a material

using a compound within the claimed refractive index range because the effect would naturally flow from use of the compound. The examiner has used a reasonable best guess to present prior art rejections by identifying compounds with structural formulae conforming to instant formulae I to XX. Compounds of these formulae would be expected to have similar refractive indexes falling within the claimed range given that applicant teaches this genus. Applicant's argument that the compounds do not have a refractive index within the claimed range further supports that one of ordinary skill in the art would be unable to identify such compounds without undue experimentation since the formula, according to applicant, can not be relied upon to find an appropriate compound despite the fact that no other guidance is given for selecting appropriate compounds.

Regarding Ueda et al. (US 2002/0094452 A1) applicant argues that the compounds of Ueda et al. do not meet instant formula XIX. However the claims recite "a fluorinated organic substance is selected from the group comprising as least one compound d having one of the following structural formulae I to XX." The compounds of Ueda et al. clearly comprise compounds of instant structural formula XIX. Compounds with additional substitution are not excluded from the present claims.

Applicant argues regarding Naito (US 2002/0106531 A1) that because the polyfluorene disclosed by Naito is doped with a luminescent dye that it is not a "consistent polyfluorene with consistent R1 and R2 groups at the 9-position." However doping a material does not change the chemical formula of the host compound. Naito

discloses a homopolymer, doping the homopolymer would not affect the polymers structural chemical formula. Applicant did not explain or present evidence how the act of doping the material changes, in any way, the structural formula of the polymer. Layers are commonly doped with other compounds in the electroluminescent art and it is well known and accepted the host and dopant compounds are not chemically changed as a result of the doping.

Additionally applicant argues regarding Okada et al. (US 2003/0091861 A1) that Ise (US 2002/0028329 A1) teaches other aryl compounds with benzoimidazoles may be used with and without an additional nitrogen atom but does not teach or remotely suggest that the fluorinated aryl compound 116 of Okada may be used without an additional nitrogen atom. However a fair reading of the reference clearly shows that Ise et al. teaches benzoimidazole compounds with and without a nitrogen atom on the "benzene" portion of the benzoimidazole are interchangeable, giving compounds with similar properties and suitable for the same purpose.

Applicant also argues regarding both Ueda et al., Naito, and Okada et al. that the examiner has not shown that "each and every element as set forth in the claim" is found in the prior art. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. *In re Fitzgerald*, 205 USPQ 597, *In re Best*, 195 USPQ 430. Applicant has not presented any evidence that the prior art

compounds do not possess the claimed refractive index. However the examiner has presented sound technical reasoning explaining how the compounds meet the present claims. Specifically the cited compounds of Ueda et al. are within the formula claimed by applicant, and therefore of sufficiently close structural relationship that one of ordinary skill in the art would reasonably expect the refractive index to be within the claimed range. Applicants have presented no evidence rebutting this position.

Applicant also argues that the Examiner's reliance on *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980) to assert that it is the Applicant's burden to show that the recited compounds do not have the claimed refractive index is misplaced. While the examiner agrees that the present claims are not directed to a process of manufacture the *In re Fitzgerald* is applicable to the present situation. In *Fitzgerald* the products were similar (nearly identical) while in the present case the compounds are closely related. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Claims were directed to a titanium alloy containing 0.2-0.4% Mo and 0.6-0.9% Ni having corrosion resistance. A Russian article disclosed a titanium alloy containing 0.25% Mo and 0.75% Ni but was silent as to corrosion resistance. The Federal Circuit held that the claim was anticipated because the percentages of Mo and Ni were squarely within the claimed ranges. The court went on to say that it was immaterial what properties the alloys had or who discovered the properties because the composition is the same and thus must necessarily exhibit the properties.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

MHW